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PROGRAM POLICY LETTER NO. P09-V-06

FROM:


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SUBJECT:

Safe Use of Welding Equipment on Longwall Mining
Systems-Interpretation of 30 C.F.R. 75.1725(a)

Scope

Coal mine operators, miners and miners' representatives, longwall equipment manufacturers, Mine Safety and Health Administration (MSHA) enforcement personnel, and other interested parties should have this information.

Purpose

This Program Policy Letter (PPL) interprets the application of Title 30 Code of Federal Regulations (30 C.F.R.) 75.1725(a) to welding equipment, including welding cables used on longwall systems; clarifies the scope and application of § 75.1002 to the use of welding cables on longwall mining systems; and clarifies the intent of § 75.1106 relative to § 75.1002. The policy is also intended to provide uniform and consistent enforcement with respect to the use of welding equipment on longwall mining systems.

Policy

This policy prohibits the permanent connection of the welding cable to the welding machine when welding is not taking place. The PPL further provides guidance to ensure that welding equipment is maintained in safe operating condition when welding is not taking place. In order to ensure that welding equipment, including welding cables, is maintained in safe operating condition, as required by § 75.1725(a), and that miners are not exposed to shock, fire, or explosion hazards when using such equipment on longwall faces, the following must be implemented:

- Two single conductor cables or a two conductor cable must be used from the welding machine to the point where welding is taking place. The grounded work lead of the welding machine must only be connected at the point where welding is taking place.
- When welding connectors (Figures 2A, 2B, and 2C) or pigtails (Figures 1A and 1B) are used, they shall be:
 1. Designed, installed, and maintained to prevent any exposed conductors or parts. Each single conductor pigtail and cap, or twist-lock connector shall be insulated (Figure 1 is an example of this). Each assembled insulated connector or pigtail and cap, when not in use, shall be jacketed with an MSHA approved cable jacket repair kit. The jacket repair shall be in accordance with the instructions provided with the kit; or
 2. Certified by MSHA under 30 C.F.R. part 18.
- No mining is to be in progress when welding is taking place as required in 30 C.F.R. § 75.1725(c) (both the shearer and the face-conveyer are to be de-energized). When the welding machine is enclosed in the controller, the longwall approval requires that it must be interlocked with the shearer so that welding can only take place when the shearer is de-energized. For stand-alone portable welding machines, procedures shall be in place to ensure that the shearer and face-conveyer are de-energized before and while any welding is performed.
- When welding is not taking place, the welding cable installed along the longwall face shall be de-energized and locked-out.
- Before connecting and energizing the welding machine and the welding cable, a qualified person must inspect the entire length of the welding cable to ensure that the connectors or pigtails have no exposed conductors or parts.
- Before welding is begun, a qualified person must ensure that methane concentration is below 1.0 volume per centum (1%) by checking for methane under the panline and feeders all around the area where welding is taking place and in the area around the portable stand-alone welder.
- Mine operators must include instructions for these procedures in their approved training plans. These procedures must also be covered during miners' required training. Such procedures shall be made available to representatives of the Secretary.

Background

Questions were raised regarding the safe use of welding cables, with pigtails or connectors (couplers) that are connected to PTO of longwall controllers at all times even when welding is not taking place. Some questioned the applicability of 30 C.F.R. § 75.1002, and recommended that such cables be prohibited.

Section 75.1106, permits welding in areas of the mines where permissible equipment is otherwise required if the provisions of the standard are followed. Since the welding cable is part of the welding equipment, § 75.1002 (Installation of electrical equipment and conductors; permissibility) does not apply because § 75.1106 creates an exception to the general requirement for permissibility of electric equipment and conductors addressed by § 75.1002. The concern here is the possibility of having exposed energized conductors, or arcing at the pigtails or connectors, which would cause fire, explosion or shock hazard.

30 C.F.R. § 75.1725(a) requires that “[m]obile and stationary machinery and equipment shall be maintained in safe operating condition and machinery or equipment in unsafe condition shall be removed from service immediately.”

Section 75.1106, Welding, cutting, or soldering with arc or flame underground, requires that “[a]ll welding, cutting, or soldering with arc or flame in all underground areas of a coal mine shall, whenever practicable, be conducted in fireproof enclosures. Welding, cutting, or soldering with arc or flame in other than fireproof enclosure shall be done under the supervision of qualified person who shall make a diligent search for fire during and after such operations and shall, immediately before and during such operations, continuously test for methane with means approved by the Secretary for detecting methane. Welding, cutting, or soldering shall not be conducted in air that contains 1.0 volume per centum or more of methane. Rock dust or suitable fire extinguishers shall be immediately available during such welding, cutting, or soldering.” (emphasis added)

This standard allows welding, cutting, and soldering (referred to as “welding” throughout the document) at the face (in areas where permissible equipment is required) under certain prescribed conditions. In promulgating this standard, MSHA recognized that welding on some equipment, such as longwall mining systems, may be necessary in areas where permissible equipment is normally required. MSHA also recognized that welding machines and welding methods are not permissible.

Consequently, the standard permits these types of activities to be performed under certain controls to prevent fires and explosions where welding is taking place.

Welding machines have been historically portable stand-alone units. When welding operations were needed on the longwall face, the welding cable had to be dragged to the location where welding was to be performed. To minimize handling the long and heavy welding cable, mine operators have installed the cable along the length of the longwall face with connectors or pigtails spaced along the cable length. Also, longwall systems have been designed to include the welding machine in the explosion proof controller. The welding machine then became part of the approved longwall system; however, the welding cable is not included in the approval.

When the welding machine is located in the longwall controller, some mine operators have kept the de-energized welding cable connected to the welding machine through the controller Power Take Off (PTO) at all times, even during mining operations when welding is not taking place. When the welding machine is a portable stand-alone unit, the welding cable has also been left connected to the welding machine at all times although it was de-energized. This policy is intended to prohibit such practices, as the welding cable may become energized unintentionally, presenting shock, fire or explosion hazards.

Authority

The Federal Mine Safety and Health Act of 1977, (30 C.F.R.) § 75.1106, § 75.1725 and § 75.1729.

Internet Availability

This program policy letter may be viewed on the Internet by accessing MSHA's home page at <http://www.msha.gov> and choosing Compliance Info.

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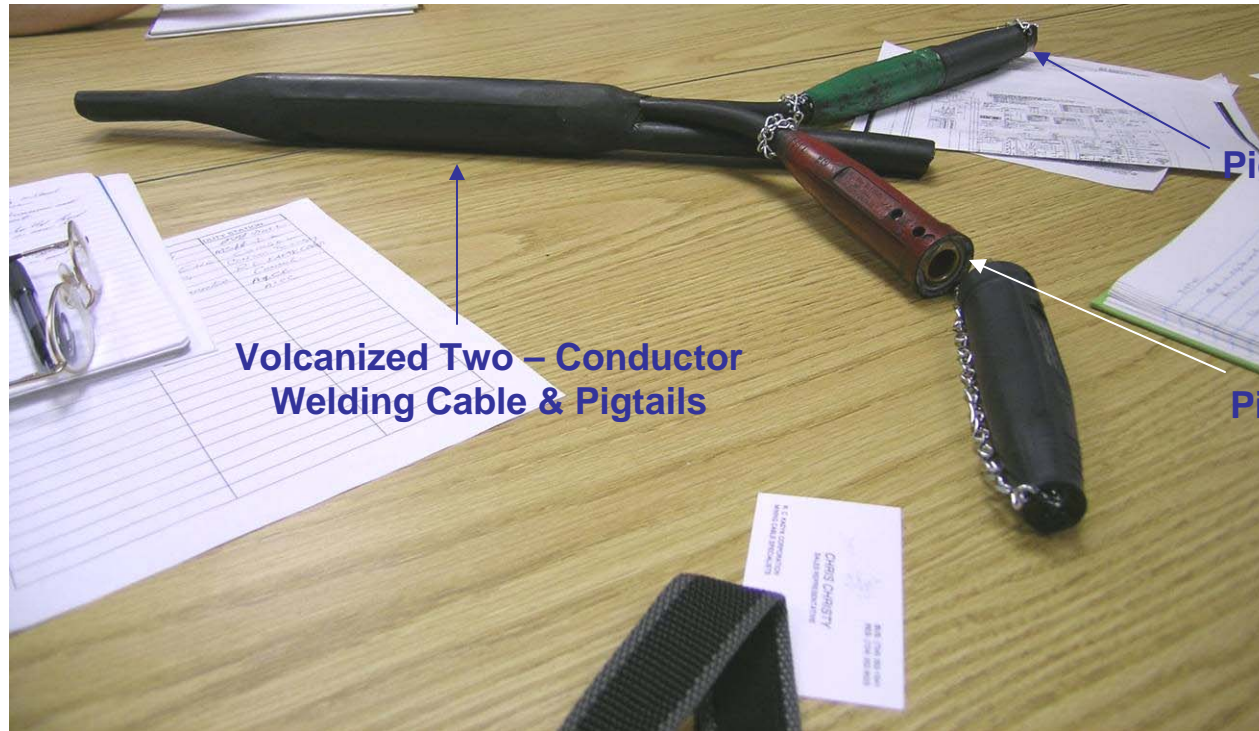
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Distribution

MSHA Program Policy Manual Holders
Miners' Representatives
Coal Mine Operators
Special Interest Groups

Attachments

1A



Volcanized Two – Conductor
Welding Cable & Pigtails

Pigtail with End Cap
Assembled

Pigtail with End Cap
Removed

1B



Pigtail (female) Connector

Twist Lock End Cap

Figure 1



Fig.2A- Coupled Connector



Fig.2B- Uncoupled Connector



**Fig.2C-Twisted Lock male
and female ends exposed
connectors**